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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,188	10/04/2007	Chandra Venkatraman	016782-0360	3239
23428 7590 01/07/2009 FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007				
EXAMINER				
RUMP, RICHARD M				
ART UNIT		PAPER NUMBER		
4181				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/581,188

**Applicant(s)**

VENKATRAMAN ET AL.

**Examiner**

Richard M. Rump

**Art Unit**

4181

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/302)  
Paper No(s)/Mail Date 01/06/2008
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of Application***

Claims 1-12 are pending and presented for examination.

### ***Priority***

Acknowledgement is made of applicant's request for foreign priority under 35 U.S.C. §119(a)-(d). Certified copies of the priority documents have been **received**.

### ***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on 06 January 2006 is acknowledged and the references listed thereon have been considered by the examiner on the attached copy of the PTO-1449 form.

### ***Specification***

The use of various trademarks has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology. Applicant supplies trademarks on page 1 of the spec line 30, and at various other locations therein.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 11 provides for the use of a substrate, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 11 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

In the instant case, the claim recites "titanium and/or chromium". In instant claim 1, the metal may be a group IVB, VB, or VIB element. Titanium and chromium does not fall within this list as it is a group IVA element.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1, 3-7, 10, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Bekaert (EP Patent No. 0856592 – Provided in IDS).**

Regarding claims 1 and 10, Bekaert discloses a layered structure comprising a first intermediate layer, comprising at least one element of group IVB, VB, or VIB, [with] a second intermediate layer deposited on top of said first layer comprising a diamond-like nano-composite composition [upon] a diamond-like carbon layer deposited on top of said second intermediate layer (Column 3, lines 5-12). The substrate is at least partially covered with the layered structure (Bekaert claim 1).

Regarding claim 3, the method recited in column 3 lines 15-53 implies that the layering may be repeated. As such, given the broadest reasonable interpretation of instant claim 3, it would be inherent that another DLC layer would be deposited upon the initial second layer. In the event of arguendo, column 5, lines 27-34 discloses that "a top layer can be present which comprises a DLN composition at its outer surface and a sublayer comprising again a mixture of DLC and DLN..", this reads upon instant claim 3.

Regarding claim 4, the first layer thickness is between 0.1 and 3 microns (column 2, lines 52-54).

Regarding claim 5, the first layer thickness is between 0.1 and 2 microns (column 2, lines 57-58).

Regarding claim 6, the DLC layer has a thickness between 0.5 to 2 microns (column 6, lines 23-35).

Regarding claim 7, the DLN composition is listed as 40-90% C, 5-40% Si, and 5-25% O (column 3, lines 5-9). This reads **directly** upon the limitations of instant claims.

Regarding claim 11, the usage of the multilayer stack is disclosed in column 8 lines 30-51.

Regarding claim 12, Bekaert discloses that the structure is produced by providing a substrate (column 3, line 18); applying a first intermediate layer made of C, H, Si, and O (column 3, lines 21-24), applying a second layer of a diamond-like nanocomposite (column 3, lines 37-36); and applying a DLC layer (column 3, lines 52-62).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 2 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bekaert (EP Patent No. 0856592 – Provided in IDS).**

Regarding claim 2, titanium and chromium are group IVA and VA elements respectively. It would be obvious to the skilled artisan at the time of invention to attempt

to use titanium and/or chromium as an addition to the layered structure. In the event of arguendo by applicants, the examiner puts forward that the usage of titanium itself or even alloyed would result in an increase of strength for the article. It is as such the examiners position that titanium and/or chromium would be a popular addition for a skilled artisan to make the structure more able to withstand mechanical damages. Note above that the examiner is assuming that the 112(2) rejection above is a typographical error given the structure of instant claim 2.

Regarding claims 8 and 9, it would be obvious to a skilled artisan at the time of invention to try doping the DLN or DLC. The rationale for doing so would be to increase adhesion and mechanical strength (Page 10, lines 23-24; Page 11, lines 10-15).

#### ***Citation of Relevant Prior Art***

There is no additional prior art made of record that is not relied upon or considered pertinent to applicant's disclosure.

#### ***Conclusion***

Claims 1-12 are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard M. Rump whose telephone number is (571)270-5848. The examiner can normally be reached on Monday through Friday 7:30 AM-5:00 PM (-5 GMT).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571)272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MICHAEL MARCHESCHI/  
Primary Examiner, Art Unit 1793

/R. M. R./  
Examiner, Art Unit 4181